

CHANNEL ISLANDS

THE STORY BEHIND THE SCENERY





*This book is dedicated to all who find Nature
not an adversary to conquer and destroy, but a storehouse*



*of infinite knowledge and experience linking man to
all things past and present. They know conserving the natural
environment is essential to our future well-being.*

CHANNEL ISLANDS

THE STORY BEHIND THE SCENERY®

by Peter C. Howorth

Edited by Gweneth Reed DenDooven

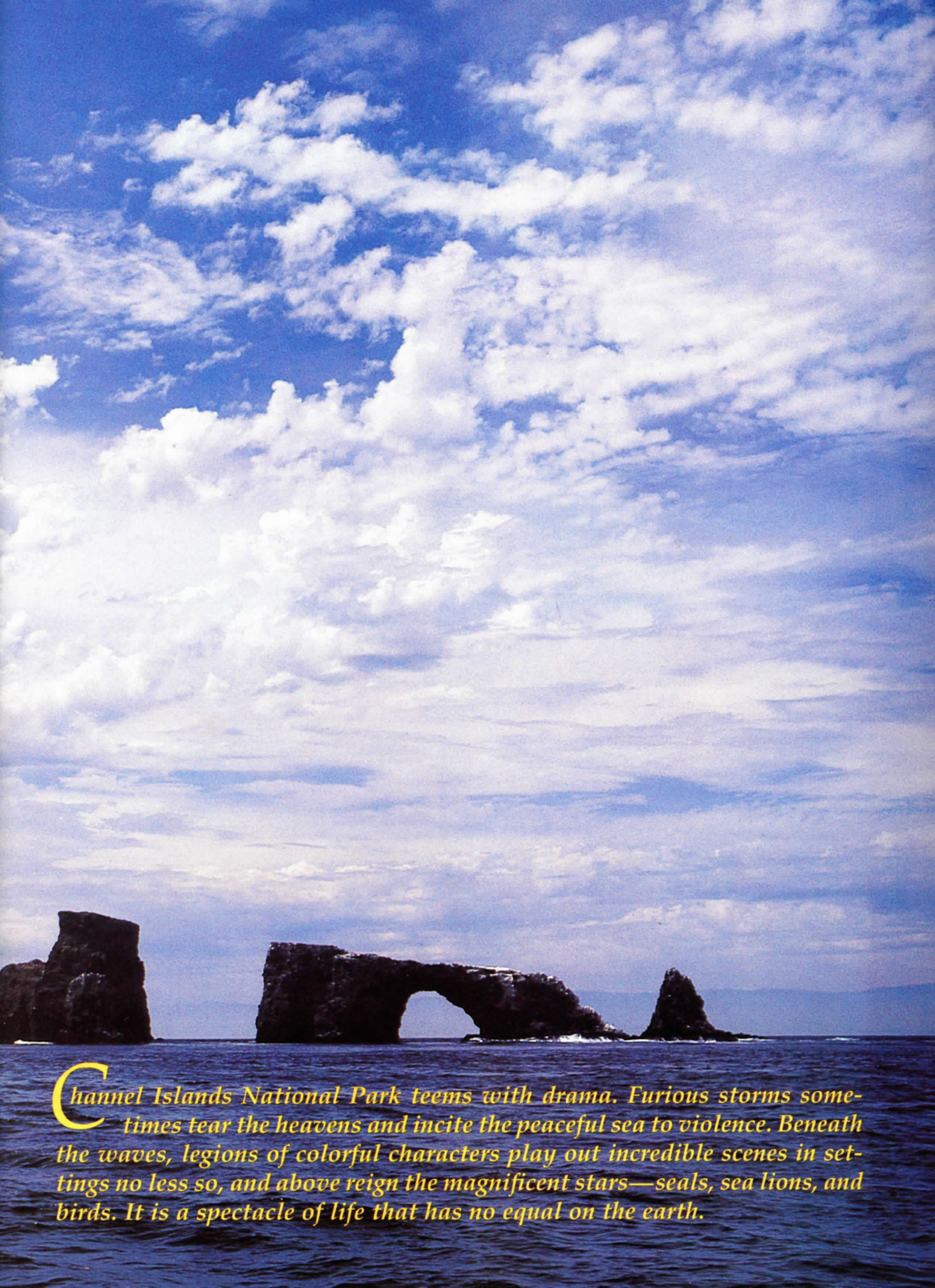
Peter C. Howorth, who has written many books and articles about the sea, gained his extensive knowledge of the Channel Islands through a long and intimate association with them. Over the last thirty years he has put down countless dives and made innumerable visits to the islands, often with camera in hand. Other activities confirm Peter's total commitment to the sea: He directs a floating clinic for sick and injured marine mammals. He also builds boats; the Indian *tomol* replica appearing on page 37 is his work.

Front cover: Elephant seals; photo by Bob Evans. Inside cover: Anacapa Island; photo by F. G. Hochberg. This page: Giant coreopsis; photo by Russ Finley.

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*C*hannel Islands National Park teems with drama. Furious storms sometimes tear the heavens and incite the peaceful sea to violence. Beneath the waves, legions of colorful characters play out incredible scenes in settings no less so, and above reign the magnificent stars—seals, sea lions, and birds. It is a spectacle of life that has no equal on the earth.

On a clear day, the Channel Islands—that windswept group of islands just off the coast of southern California—appear to be only a stone's throw away from the mainland, and in their sunlit beauty they seem to beckon us nearer yet. But when the weather shifts and the fog swirls in soft haloes around them, the islands recede into the distance, assuming a brooding and forbidding countenance.

This has always been the way mainland people have had to view the Channel Islands—now a national park and a primitive anachronism in the teeming coastal megalopolis of southern California. Accessible only by boat, the islands are miles yet eons away from the crowds, the noise, the frenzy. Birds and seals are the only throngs here, the murmur of wind and waves the only sounds, and a change in the weather the only restive element in the serenity of island life. Aloof and lonely, the islands stand in splendor on the horizon, silently reminding us of our primeval past and prompting us to ponder the unknowable future.

Once in the Santa Barbara Channel, we become an integral part of that strange island world, whose beauty lies in stark simplicity. One with nature, we are exposed and vulnerable to its laws, quixotic though they sometimes seem to be. Although sunny days are frequent, there is always the chance that a fog may descend or a storm may suddenly break. And the wind must always have its wanton way.

But these elements only enhance the mysterious elegance of the islands. And when the waves swell, the breakers crash, and the foghorn blares its melancholy warning, we realize that there is one thing here that is more pervasive, more dominant than the weather. Throughout the years, every island resident—from the timid deermouse to the adventurous human species—has felt its power. It molds the islands, affects the habits of the island life, and nourishes all.

That tyrant and benefactor is the *sea*—and its dominion is total.—G.R.D.



HAL CLASON

The Channel Islands, so close to the long, sandy beaches of the California mainland, are nevertheless very different from them. Products of their own climates, they also differ greatly from island to island and from one part of an island to another.

The 250,000-acre area encompassed by the park includes five islands. Lying far to the south is *Santa Barbara*, which rarely reveals its face to the coast. Even then—because of its small size (about



An Island World

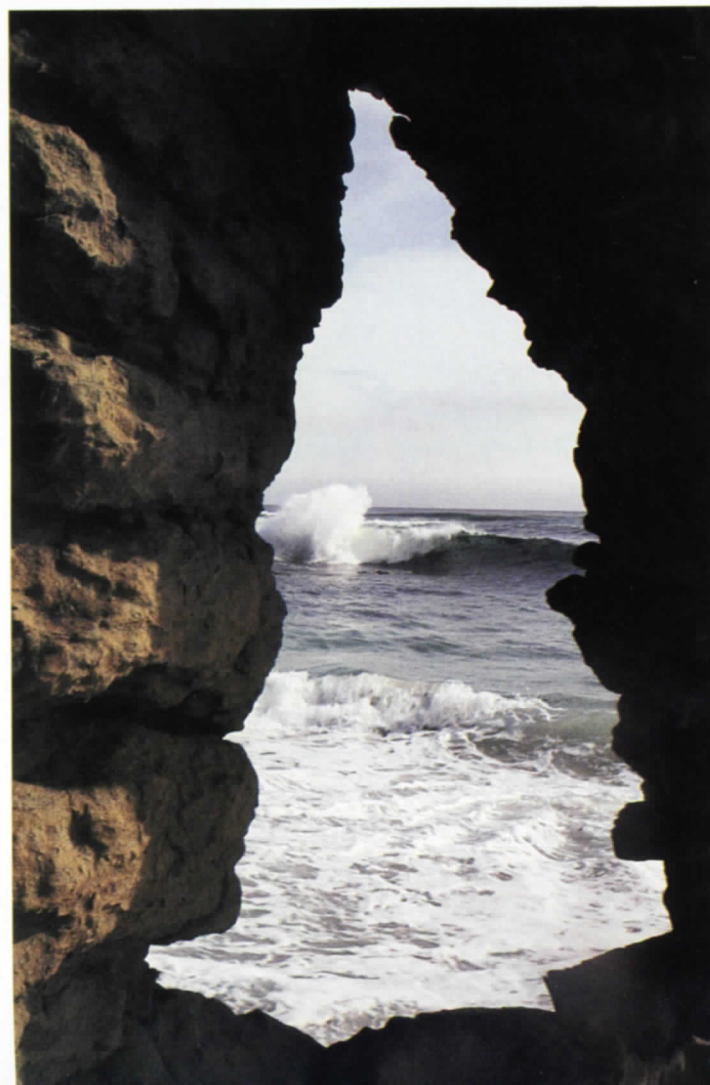
640 acres) and distance away (forty miles)—it can be seen from only a few mainland vantage points. The island is almost entirely surrounded by steep cliffs, which constitute a rugged shoreline broken here and there by tiny beaches that lie fully exposed and vulnerable to the roistering sea. But above the craggy bluffs, gentle slopes—marred only by a few gullies—stretch slowly skyward and culminate in two separated peaks.

In contrast, *Anacapa* often seems so close that one could reach out and touch it. This five-mile-long island—really three separate isles in one—has a total acreage of only one square mile. Of all the islands, *Anacapa* lies closest to the mainland. Eleven miles west of Port Hueneme (near Ventura), it is the first in the four-island northern chain.

Like Santa Barbara, *Anacapa* seems desolate



The islands are continuously sculpted by nature's elements. The powerful surf, aided by incessant, wind-driven sand, formed this sea cave on Santa Rosa.



and formidable at first sight. Its tortured igneous flanks rise precipitously from the sea and are pockmarked with sea-etched caves. West Anacapa, the largest of the isles, is indeed austere, punctuated as it is by a steep ridge; but gentle mesas, surrounded by high cliffs, extend along the tops of the two smaller isles, Middle Anacapa and East Anacapa. Except for Frenchy's Cove, the only beaches are a few cobblestoned bights and strips of sand, and often they are submerged in high tides. East Anacapa is the park island most frequently visited, but disembarking boat passengers must climb a steep flight of stairs before they can set out to explore the island.

Farther west, some twenty-three miles south of the city of Santa Barbara, sprawls the wild and rugged island of *Santa Cruz*, at 62,000 acres the largest of all the Channel Islands. Its topography is also the most diverse, with its gigantic sea caves and its many peaks, the highest an impressive 2,400 feet. The north shore, which faces the mainland, is characterized by deep, wooded canyons and steep cliffs. This is the "weather side," on which the prevailing northwesterlies constantly hammer away. But even this rough aspect becomes milder when, in summer, the pebbled coves are softened with a coverlet of sand.

On the south side, facing oceanward, buff-colored hills terminate in abrupt cliffs or in streambeds that meander to the sea. Several

Constructed by the old Lighthouse Service early in this century as a beacon for ships endangered by heavy fog, the Anacapa light continues to serve mariners. Other buildings on the island are used by the National Park Service to house a museum, two huge water tanks, maintenance items, and a resident ranger.

For most of the year the islands present tawny faces verdantly accented with shrubs and trees. But in the spring the islands erupt in flamboyant masses of color, cooled only by the surrounding sea. This aerial view of tiny Santa Barbara reveals slopes resplendent with the flowers of tidy tips, giant coreopsis, and goldfields.

THOMAS COWELL



sandy beaches grace the southwestern coast of this island, while farther east a number of creeks culminate in protected coves. The island is split along most of its length by a fertile valley sheltered by hills on either side.

Santa Rosa, at 55,000 acres almost as large, stretches across the sea to the southwest. Like Santa Cruz an island of contrasts, it features lazy slopes yielding to long shores of pristine sand interrupted by short, rocky bluffs. On its northeastern shore, for a short distance, the cliffs rival those of Santa Cruz. Again, this is an island whose interior is generally hospitable; its gentle hills and sprawling canyons bely its stern exterior.

Over the bulge in the horizon lies lonely *San Miguel*, which can take a full two days to reach (by sailboat) and is a haven for hosts of seals, sea lions, and sea birds. The countenance of this remote, 10,000-acre island appears benign at first, until one realizes that its profile of two low hills was carved and smoothed by the northwesterly gales that regularly blast the island. Denuded by overgrazing in the past and dissected here and there by deeply eroded ravines, the island is a landscape of rolling hills, surrounded by unusually rough seas and often crowned with a wreath of fog.

The weather side is studded with islets,



The hardiness of some island vegetation is typified by the native plants that grow in the shifting sand dunes of San Miguel.

Pelican Harbor, on the north shore of Santa Cruz, was a popular filming locale for early moviemakers and today is a favorite anchorage for visiting yachtsmen.



reefs, and pinnacle fangs; leeward the rugged landscape gives way to pleasant beaches. Pervading the island itself is a hostile element . . . the sand. Suffocating some parts of the interior in a lifeless embrace, it often overwhelms the vegetation, already gnarled and misshapen from its life struggles. Faring somewhat better are the plants in other parts of the island. They grow in protective clumps, an adaptation that below-ground allows the tangled roots to retain the precious soil and above-ground forms a solid mass that acts as a buttress against the incessant, wind-driven sand.

Three other islands, not within the park, complete the Channel Islands group: the popular Santa Catalina, some twenty miles from Long Beach, and the Navy-owned islands of San Clemente, about sixty miles west of San Diego, and San Nicolas, farthest out of all. On a map, these islands flank and front Santa Barbara, almost as if placed there to protect the tiny island from the vagaries of the huge Pacific.

With such an impressive variety of habitats, the Channel Islands region has been able to host and sustain a wide range of plants and animals. In many cases these life forms evolved because of the differing environments here. Some were here long before man came on the scene.

ISLAND ORIGINS

Scientists once believed that the four northern Channel Islands were once connected to the mainland (at a place called Point Mugu) and that the Santa Monica Mountains, terrain that somewhat resembles parts of the islands, were linked structurally to Anacapa and beyond. There has never been any agreement, however, as to when this bridge existed; estimates have ranged from a staggering thirty million years ago to a mere seventeen thousand. This belief has recently been challenged, since the geologic evidence is lacking. Indeed, arguments in support of the land-bridge theory have been based primarily upon the presence on the islands of land animals—both fossil and living. *Whether* the land bridge existed and, if it did, *when* it existed are questions still unanswered.

Land bridge or not, the islands have changed drastically over the eons of time spanned by their geologic lives. They were formed some fourteen million years ago, when volcanic activity in the region off the southern California shore was high. As this activity reached its apex, islands rose out of the sea. As volcanism waned and the earth cooled, they slowly settled, until only a few, if any, visible peaks remained. On the mainland, the sea encroached farther and farther, filling shallow basins far inland.

Parts of the islands were forged by volcanoes, then shaped by surf. Arch Rock, on East Anacapa, will eventually succumb to the pounding waves.



JOHN ENGELMAN

This song sparrow may have flown here from the mainland.

But with the advent of the Ice Age more than a million years ago, the scene changed. Monumental volumes of water froze in glaciers on land, lowering the sea worldwide by entrapping its waters in ice. The peaks thus exposed became small islands—first Santa Cruz and Santa Rosa, then Santa Barbara, once only a shallow reef. Anacapa and San Miguel remained hidden beneath the waves during this early stage of island-building.

As the crust of the earth buckled and strained under the stresses of change, faults fractured and



RUSS FINLEY



JOHN ENGELMAN

An early observer called the Santa Cruz Island scrub jay "the most interesting bird on the island." It is indeed an eyecatcher—and a bird unique to the island, having evolved there over many years.

The islands were born of the sea, and perhaps the sea will some day reclaim them. Meanwhile, erosion from heavy surf takes its toll on exposed shores, such as this windswept coast of San Miguel.

tore the land. Some terrain slid higher and stood above the level of the sea; other regions rippled and folded downward. The "Ice Age," as we familiarly use the term, consisted of not one but several periods of glaciation, several ice ages. In the intermittent periods of melting, when tremendous volumes of water were being gradually released, the seas rose; as temperatures lowered and the glaciers regained their icy grip upon the land, the seas shrank. During the last few hundred thousand years, there were probably some islands that appeared and disappeared a number of times.

Geologists believe that less than twenty thousand years ago the four northern Channel Islands were one colossal "super-island." As the Ice Age slowly came to an end with the final melting of the glaciers and attendant rise of the sea, this huge land mass, often called *Santarosae*, developed into a series of islands. Less than twelve thousand years ago, Santa Cruz and Anacapa separated; San Miguel made its appearance within the following two thousand years. Since that time the islands have gradually shrunk to their present sizes; they will likely go on shrinking as the sea continues to rise and erosion from storm surf continues to take its toll on exposed coasts.

The shapes of the islands reveal some of their own geologic history; flat terraces above and

below the water, for example, represent past sea levels, although the record is complicated by the fact that terraces of the same age vary in elevation from one island to another and from the islands to the mainland. These variations may have been caused by the independent movement of blocks within the crust of the earth—movement that is still going on, of course, in the never-ending processes of geologic change.

The outline of the ancient super-island lies submerged and invisible. It has been scientifically traced by comparing estimates of past sea levels with depth lines established by soundings. (It is interesting that the theoretical land bridge does not "surface" until this outline has been stretched far beyond estimates of sea levels of the recent past. Thus it would appear that the land bridge, if it did exist, was not recent enough to account for the flora and fauna now found on the islands.)

Sediments, above and below water, furnish further clues. By analyzing them for marine and terrestrial forms and by dating them through modern techniques, researchers have been able to determine whether the deposits were underwater or on land in prehistoric times.

But there are other, more dramatic finds that tell us something of what these islands were like many thousands of years ago. These are the animal remains—the fossil elephant bones—that



have been found on Santa Rosa and San Miguel.

THE DWARF MAMMOTH OF SANTAROSAE

The discovered bones belonged to a stout, shaggy creature that once tramped the slopes of Santarosae, a relative of the mammoth that inhabited the southern California region at that time. Unlike the mainland behemoth, the Santarosae beast was a stunted fellow, growing only about six feet tall. For this reason it has been called the "dwarf mammoth," or "pygmy mammoth," terms that amuse us with their contradictory components.

For many years scientists assumed that these animals could not swim and that they therefore came to Santarosae by way of a land bridge; the land-bridge theory itself was based largely upon this assumption. In truth, elephants are excellent swimmers, and in some regions they even lead semi-aquatic lives. An elephant's trunk makes an ideal snorkel, and its massive skull—with its several air pockets—easily keeps the animal afloat.

This puts a real "damper" on the land-bridge theory, especially since few other terrestrial animals, fossil or living, are found on the islands. If a land bridge had existed within recent geologic time, it is likely that *many* mainland creatures would have traveled across it and populated the ancient island. Moreover, the presence of the few

animal species that do inhabit the islands can be explained in other ways:

California winters can be extremely dry, moderately wet, and even torrential. This diversity apparently also existed in prehistoric times, as evidenced by the annual rings of fossil trees. (Wet seasons are indicated by periods of fast growth; dry spells by periods of slow growth.) If anything, the climate of many thousands of years ago was wetter than that of today, since water-loving conifers and cypresses were fairly common on the islands then. Fossils of these trees have been found on Santa Cruz, Santa Rosa, and San Miguel.

In such a humid climate, floods would have occurred frequently. As trees, logs, and brush were washed out to sea, some animals would have been swept along with them. Most of these accidental voyagers probably perished—by drowning, exposure, or starvation—but a few could have reached Santarosae on the floating debris, especially since the land mass was large and lay close to the mainland. (In such a situation, one pregnant female could have established an entirely new species here.) All things considered, there seems little doubt that it was indeed chance that played the key role in bringing animals to the islands.

Man himself may have introduced some ani-



The island fox thrives upon a diet ranging from bird eggs to berries. This gentle creature inhabits six of the eight Channel Islands—in six distinct subspecies!

Lime castings of long-decayed trees in a San Miguel "ghost forest" resemble tombstones gray with age. The brittle forms are composed of lightly cemented particles of sand. The prevailing northwesterly winds are constantly unearthing new forests even as they are burying old ones.

RUSS FINLEY

mals—either by accident or by design. Small creatures such as mice may have been inadvertently transported in Indian canoes while in the act of raiding food baskets. Others may have been taken to the islands as pets or livestock.

Did man live on Santarosae during the sojourn of the dwarf mammoth? If so, did he hunt it, thereby contributing to its demise? A depression, which has been called a "firepit" and is supposedly over forty thousand years old, was found recently on Santa Rosa. Around its rim were charred mammoth bones and some stones that might have been tools. Were the bones deposited near the pit by chance? Or were they the remnants of some ancient man's feast?

To date no clear tool marks have been found on the bones, nor have any definite traces of human habitation been found that date that far back. The only conclusive scientific data that is available places man on the islands only eleven thousand years ago. Until other evidence is found, the matter of the coexistence of man and mammoth on Santarosae will remain a tantalizing question.

THE GHOST FORESTS OF SAN MIGUEL

The islands present other riddles, however, that *can* be explained. One of these concerns the curious caliche "ghost forests" that contribute such an alien aura to portions of the San Miguel landscape. The solution, though actually quite prosaic, is nonetheless an interesting one:

As calcium carbonate sand—composed mainly of the shattered lime skeletons of countless sea creatures—was blown inland from the beaches, it covered the existing vegetation. Organic acids in the plants, reacting chemically with the sand, cemented the particles together. After the plants had decayed and disappeared, perfect castings were left. Some of these castings are many thousands of years old; others are quite new. (In many cases, calcified sheaths have formed over the roots of still-living plants, proof that this is the fastest process of fossilization known.) These eerie caliche forms also occur on Santa Rosa and San Nicolas, but elsewhere in the world they are quite rare.



THE EVOLUTION OF ISLAND LIFE

The Channel Islands is home to a number of plants and animals found nowhere else on earth. Perhaps the most striking of the animals is the island fox, thought to be a miniature form of the mainland gray fox. Each of the islands, except Anacapa and Santa Barbara, has its own subspecies.

This agile animal, about the size of a housecat, is the largest terrestrial animal in the islands. It lives in burrows and ravines, often venturing forth to forage, even in broad daylight. Usually the paired-off foxes have a litter every spring. This appealing animal shows little fear of people and often seems rather tame.

Quite another matter is the spotted skunk, which is similar to its mainland kin except for a broader face and a shorter tail. Island individuals also vary from one to another. Somewhat smaller than the island fox, it lives only on Santa Rosa and Santa Cruz. It is nocturnal, emerging in darkness to search for insects, mice, and berries; thus it is rarely seen by casual visitors.

This is the reason also that bats are seldom observed on the islands, although over the years more species of bats have been counted here than of any other mammal, probably because of their ability to fly considerable distances. Eight species have been found in varying populations within the park region, although some are quite rare.

Some authorities believe that isolation has caused several species of small animals to become larger over succeeding generations, perhaps flourishing because of the absence of predators and the presence of abundant food. Examples are the deermouse (all eight islands have their own subspecies) and the startling Santa Cruz Island scrub jay, which looks like a giant bluejay. Conversely, large-animal species—such as the island fox and the ancient dwarf mammoth—apparently shrank, probably because of the limited area in their environment. By evolving to a smaller size and thus requiring proportionately less food, a greater population and perhaps the survival of the species is ensured.

A few reptiles are found in the Channel Islands. The island night lizard, a rare species classified as "threatened" by the Fish and Wildlife Service, lives only on Santa Barbara Island, within the park, and on San Nicolas and San Clemente islands, outside the park. It has a mottled, baggy skin and two light, often indistinct, stripes along its back. Little is known of its life history. Three other species of lizards and three species of snakes also live on various islands in the park.

All in all, surprisingly few species of native land animals (other than those that fly) live in the Channel Islands. Plants have been somewhat more successful in establishing themselves here, probably because there are many types of seeds that can be easily dispersed and transported by strong winds, ocean currents, and birds—all familiar elements of this environment. And, unlike animals, some plants can tolerate salt water, even for prolonged periods. Torn loose by heavy surf or floods, a mainland plant could easily drift to an island shore, take root, flourish, and spread its seeds.

Once established, some of these plants evolved into varieties unique to the islands. Certain species of ironwood trees, succulent dudleyas, buckwheats, delicate lotuses, mallows, and locoweeds are but a few. The ironwood tree of Santa Cruz and Santa Rosa is something of an enigma; the only close mainland relative is a fossil found well inland.

Other plants have been easier to trace. The giant coreopsis (also known as "tree sunflower" or "sea dahlia") is common to all five islands but abounds on Anacapa. It also grows on the mainland near Point Mugu. Its green, woody stems, usually growing two to four feet high, look like stunted tree trunks, and a concentration of the plants resembles nothing so much as a miniature, bizarre forest that might well be inhabited by gnomes. Most of the year the plant is dormant, appearing almost lifeless; but in the spring, when its large, distinctive flowers are in bloom, a core-

The crystalline iceplant thrives in rather arid soil by absorbing moisture from sea breezes.



F. G. HOCHBERG

The giant coreopsis blooms only briefly in the spring.

On Anacapa, where the plant abounds, the bright blossoms are visible all the way to the mainland.



F. G. HOCHBERG

opsis stand is a veritable Easter basket of green and yellow color.

Two conifers, remnants of an ancient Pleistocene forest, are found only in the islands and in a few isolated sections of the mainland. They are the Torrey pine (found only on Santa Rosa Island and in Torrey Pines State Park, just north of San Diego) and the Santa Cruz Island pine.

THE INVASION OF THE EXOTICS

Because there are so few island plants and animals and because they are so isolated, the ecosystems to which they belong are very fragile. Held in such a delicate balance, the intrusion of any exotic (introduced species) can have a devastating effect.

The crystalline iceplant of Santa Barbara Island is a case in point. It arrived before the turn of the century, perhaps as seeds carried through the air on the feathers of a gull or rafted on drifting debris over miles of open sea. Once on the island, this tenacious plant (a native of South Africa) gradually encroached upon native vegetation by concentrating within its own tissues toxic levels of salt obtained from the moisture-laden sea air. Even dying plants contributed to the onslaught as they leached their salt content into the soil. Few native plants could tolerate such an abundance of salt; with no competition to control it, the iceplant soon spread in thick mats over much of the island.

Today the native plants of Santa Barbara are still severely depleted. (Farming, grazing, and periodic burning through the years also contributed to the vegetative desolation of Santa Barbara.) Even the giant coreopsis, once noted on the island for its size and for the density of its forests, now grows only in a few isolated stands.

The native plants and animals of the Channel Islands occupy highly specialized niches in the overall ecological network of the coastal environment. Having evolved over so many millennia, they represent a precious resource that must be constantly monitored and vigilantly guarded if it is to be preserved. This is not an easy task for National Park Service personnel, but it is a rewarding one. Many of the native plants are making a comeback, even on denuded Santa Barbara.

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The Teeming Seas

Channel Islands National Park encompasses far more than five small islands. The sea, up to a mile offshore, is also included within its administrative boundaries. And the National Marine Sanctuary expands this protected area by another five miles. In this vast, watery belt, life abounds

in a rich variety that features some of the most fascinating creatures found on this planet.

TIDEPOL AND SHORE LIFE

Lying at the edge of the sea, and harboring many complex communities, are the tidepools.



RUSS FINLEY

At a certain time every year, thousands of seals congregate on the shores of their birthplace to continue the breeding cycle.

waves and powerful currents, as well as the drying sun and suffocating heat of low tides, are but a few of the elements with which they must contend, and competition for space is intense. Only the fit and the fortunate endure—if, that is, they escape the attention of the predatory tidepool inhabitants, which in turn are vulnerable to legions of other voracious predators. And so it goes, in the endless food chain.

In comparison, the sandy beaches seem almost desertlike, and like deserts they host a number of unseen inhabitants. Perhaps the most familiar of the beach denizens is the sand crab, a creature about the size of a marble. Its egg-shaped body was forged by the environment; though graceless, it is supremely well adapted to the pressures of its sand-and-surf surroundings. Thrusting its feathery antennae upward as each wave recedes, it strains tidbits of food from the racing backwash. Farther up the shore the sandhoppers lie hidden, emerging at night in jubilant, leaping swarms to search for kelp fronds and other edibles.

The huge eyes of the harbor seal can spot prey even in dim underwater light. It is believed that its whiskers are so sensitive that they can pick up sound vibrations undersea.



PETER HOWORTH

These miniature arenas teem with organisms, whose very existence in this surf-pounded realm is proof of their hardiness. Here, desperate struggles for survival are an everyday fact of life.

The battle begins from the moment they attempt to gain a foothold on the rocks. Crashing



In regions of calmer seas, purple olive shells pebble the sand in and beyond the surf, and velvety sand dollars stand on edge like dominoes on the ocean floor. Buried beneath the sand are the filter-feeding clams, which are sometimes dredged out by huge bat rays. Goggle-eyed flatfish, including halibut, cover themselves with a thin blanket of sand, ready to dash into schools of anchovies as they swim by above. Other, less aggressive fish merely wait for food to come to them.

THE GREGARIOUS PINNIPEDS

Just beyond the surf flock the seals and sea lions, appealing and almost as inquisitive about the park visitors—those strange intruders into their realm—as their human audience is about them! Six species of these animals, called *pinnipeds*, or “fin-footed ones,” are found within park boundaries: the California sea lion, Steller sea lion, northern elephant seal, harbor seal, northern fur seal, and Guadalupe fur seal. Five of these species breed at San Miguel, making this island the most diversified seal rookery in the world and providing a truly astonishing wildlife display.

At certain times every year, several species of pinnipeds ranging throughout the northeastern Pacific begin the often lengthy journey back to the places where they were born. For many, this is San Miguel’s Point Bennett, a sprawling, sandy peninsula guarded by a few large rock outcroppings. Here the cows, heavy with young, lumber ashore, bear their pups, breed again, and then return to their nomadic way of life in the sea.

This event occurs on such a grand scale that it is almost impossible to imagine. In the spring, the California sea lions arrive by the thousands. Soon the shores are jammed with screaming, bellowing, caterwauling hordes. Huge bulls battle for favored locations for their breeding harems, even while the cows are still birthing their young.

Most of the pups are born in June, although some arrive as early as May and as late as July. The next reproductive cycle begins immediately—and breeding continues throughout the rest of the summer. Regardless of the date of conception, most of next year’s crop will be born about the same time. This occurs because of an interesting biological phenomenon known as “delayed implantation.” No matter when the egg is fertilized during the summer, it will not attach itself

Tidepools are compact, thriving communities consisting of organisms hardy enough to withstand the stresses of an environment constantly assaulted by changing tides and sun. A visit to a tidepool is a lesson in ecology; each inhabitant depends—directly or indirectly—upon the others for its very survival.

Young elephant-seal bulls often engage in mock combat, first making threatening gestures, then biting each other on the neck, which soon becomes crusted with scar tissue. Later the battles are fought in earnest; victorious bulls win the choice harems.

PETER HOWORTH



to the uterine walls and begin gestating until about September.

This adaptation makes good sense in many ways: Sea lions must bear their young on land, where they are the most vulnerable; by birthing their pups all at the same time, mothers achieve "safety in numbers" for themselves and their young. With gestation ending in June, the seals then have the entire summer—a gentle season of comparatively mild weather and few storms—in which to rear their pups. Food is abundant, once the pups have taken to the sea, and they grow rapidly on a diet of fish and squid. Among the adults, breeding begins anew, and the presence of so many cows in one place bodes well for next year's crop.

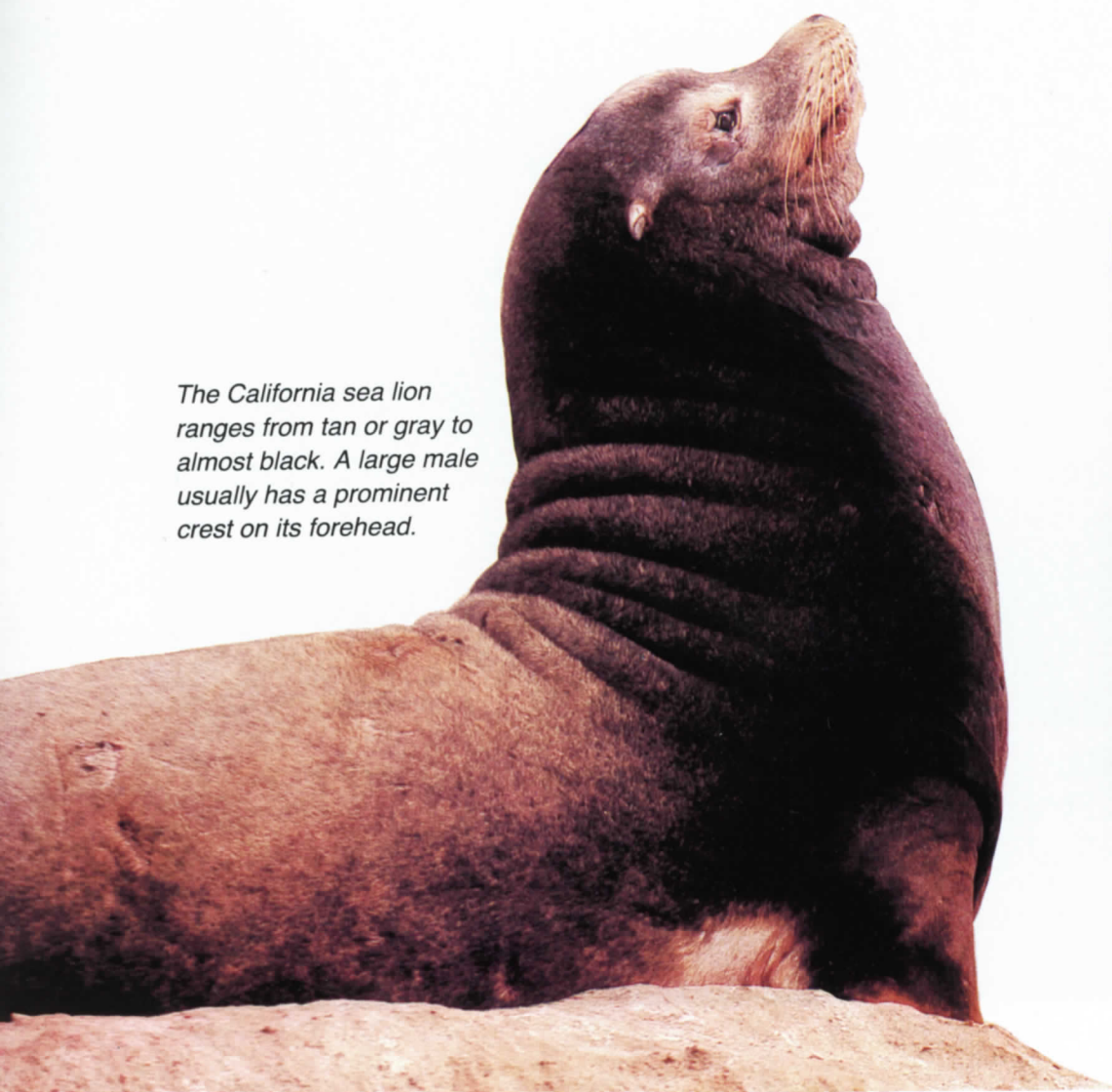
In adulthood, California sea-lion cows may be more than six feet long and weigh over three hundred pounds; bulls may be nine feet long and weigh nearly a thousand pounds. The Steller, or northern, sea lion grows even larger: The bulls often measure over eleven feet and weigh up to a ton; the cows are proportionately smaller. Only a few of these impressive mammals are found on San Miguel; most live farther north.

The northern, or Alaska, fur seal is not nearly



PETER HOWORTH

Seal's milk is second only to whale's milk in nutrition. This harbor-seal pup will double its weight in less than a month.



The California sea lion ranges from tan or gray to almost black. A large male usually has a prominent crest on its forehead.

PETER HOWORTH

The Guadalupe fur seal, rare visitor to the Channel Islands, has a long nose, similar to a collie's, and thick fur encircling its neck.



F. G. HOCHBERG



The engaging harbor seal is easily identified by its mottled coat, which can be silver and black or tan and brown.

The pinnipeds ("fin-footed" mammals) of the Channel Islands are classified into two major groups—eared seals (sea lions and fur seals) and true seals (harbor and elephant seals). Besides visible ears, the first group is readily distinguished by a waddling gait on land and by a method of swimming with foreflippers. On shore, true seals, which lack external ears, slide on their bellies in a lunging motion; in water they scull with their hind flippers. All occasionally "haul out" on beaches to rest and stay warm.

The northern fur seal has a convex facial profile quite unlike other seals and its breast, throat, and cheeks are usually a lighter color. Its ears, hind flippers, and whiskers are very long.

Pinnipeds



PETER HOWORTH



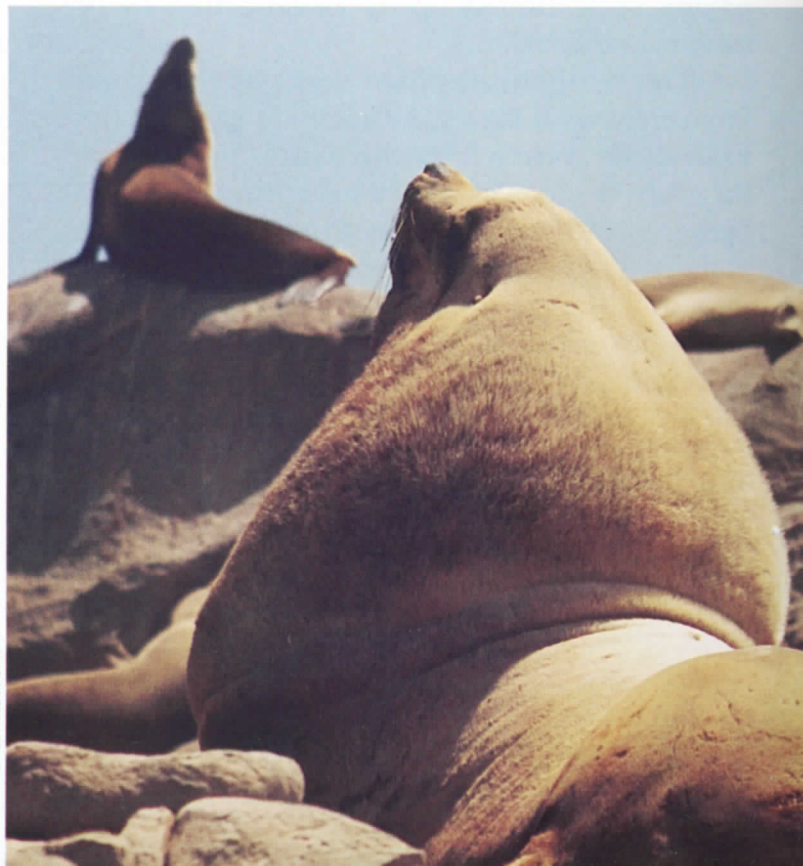
PETER HOWORTH

The sheer size of the elephant seal renders it unmistakable. Females may measure more than twelve feet; males, up to eighteen. The bull's snout resembles the proboscis of a pachyderm.



NATIONAL MARINE FISHERIES PHOTO BY BUD ANTONELIS

The Steller sea lion is twice the size of its southern counterpart, the California sea lion. It has a prominent, thick, yellowish mane.



PETER HOWORTH



PETER HOWORTH

as large as the California sea lion. But when defending their harems, the aggressive bulls often succeed in driving off the brawny sea-lion bulls. This fierce determination undoubtedly aided these seals in recolonizing San Miguel in the last few decades. Before then, they bred only on some remote islands in the Bering Sea. Today, many hundreds inhabit San Miguel.

The Guadalupe fur seal, once common on San Miguel (as revealed by the many bones found in Indian middens) are seen only now and then, having been hunted nearly to extinction by fur traders in the 1800s.

The northern elephant seal population has fared somewhat better. Although fewer than fifty individuals were left by the end of the last century, tens of thousands exist today, and their numbers are steadily rising. This singular creature (the male is distinguished by a trunklike snout that inflates when the animal utters its weird sounds) flourishes on San Miguel and Santa Barbara islands and seems to be spreading to Santa Rosa. They breed in winter. "Hauling out" in sandy coves at such times, they jam together in tight masses resembling piles of huge boulders.

The winsome harbor seal ranges throughout the waters of the park region and probably breeds on all the islands, the female bearing its pups in February and March. Shy and secretive, these animals guard their small rookeries with a vigilance that belies their gentle demeanor.

The playful sea otters (*not* pinnipeds) once

thrived in the Channel Islands, but their luxurious coats made them the prime target of the fur traders of the last century. Today, most of them live along the Big Sur coast, where they feed on shellfish and other marine organisms, entertaining their audiences for hours on end with their comical antics.

THE SEA BIRDS

The Channel Islands region is also a haven for sea birds, and several major bird rookeries exist here. In fact, this is the most important nesting area south of the Farallon Islands (off the coast of San Francisco) and is one of the major breeding areas in the eastern North Pacific.

The activity is centered principally around San Miguel. Some sixty percent of the birds nesting in the Channel Islands stay here, the majority concentrating on Prince Island, off San Miguel's northeastern shore. Most of the southern California Cassin's auklets—small, stout birds who use their stubby wings both for flying and for chasing small fish underwater—nest there, over ten thousand pairs in all.

San Miguel is also the principal island rookery for three species of cormorants, two of storm petrels, and the pigeon guillemot, a bird distinguished by its thick, black body and short, white-patched wings. This little creature usually arrives to breed in late winter or early spring, nesting on ledges and in caves along the cliffs.

The waters off San Miguel are rich in the fish

The sea otter—not a pinniped—is seen in the Channel Islands occasionally, often “rafting” in the kelp beds to rest. Once it was a common sight here, but it was hunted nearly to extinction by fur traders of the last century.



KATHY WINNETT-MURRAY

The western gull, a familiar resident, nests on all the Channel Islands of southern California.



PAUL COLLINS

The Brandt's cormorant is a superb diver as well as a powerful flier. Propelled by the fast strokes of its webbed feet, it can even chase fish underwater.

Overleaf: Brown pelicans soar gracefully above a sun-drenched sea. Photo by Bob Evans

Sandpipers form an elegant frieze as they perch high and dry above the surf. Shorebirds abound in the islands, where food is plentiful and predators are few.

BOB EVANS









*Like the winged reptiles
resembles, the brown
pelican seems to belong to
an age long past. The
pelican likes to roost near
the water, where a meal
can sometimes be pro-
cured with one dive*

*Channel Islands National
Park is a haven for sea gulls.
Here they find favorable loca-
tions in which they can build
their nests high above the
unpredictable sea. In this nest,
one chick has just emerged
from the egg into the light of day
while another observes through
a crack in the shell and a third
apparently is in no hurry.*

RUSS FINLEY



RUSS FINLEY

and other organisms that constitute the diet of the sea birds. Here, the cold California Current sweeps southward. The strong winds that blow the sun-warmed water out to sea also cause the cold water to rise from the depths to its surface, where its nutrient-laden content is harvested by the birds.

This region is known as a "transitional zone," a place where organisms common to colder climates merge with those of warmer ones. At the other end of this zone, toward Anacapa and Santa Barbara islands, the warm California Countercurrent attracts creatures from southern waters.

These factors—food and climate—seem to dictate where certain populations of sea birds will gather. The black storm petrel, a southern bird, nests only as far north as Santa Barbara Island;



conversely, the pigeon guillemot does not nest below Santa Barbara. The Xantus' murrelet nests no farther north than San Miguel.

Santa Barbara Island, including its offshore rocks and isles, is a major sea-bird rookery in its own right. It harbors the largest nesting population of the Xantus' murrelet in the United States (if not the world) and is the only nesting place in America for the black storm petrel. The western gull flourishes here, as well as on Anacapa.

Perhaps the most impressive of the Channel Islands birds are the California brown pelicans, often seen skimming along in wedge formations just above the waves. When one bird flaps its wings, the motion ripples down the column with the precision of a jet flying team. This meticulous grace disappears, however, when the bird forages for fish. As it crumples and crashes into the sea, the brown pelican resembles a crippled plane awkwardly plummeting to its destruction. There is a method to the madness, however: As the pelican hits the water, its bill opens to scoop up dozens of small fish and stash them in the pouch below its bill, to be swallowed later, a few at a time.

In the past, a serious threat to the existence of the pelican has been the presence of DDT, which entered the sea and was passed to the birds through anchovies and other small fishes that ingested the poison. The pesticide could not be eliminated from the tissues of the pelican, and it eventually accumulated in such high levels that it began to affect some of their physiological processes. Eggshells grew thinner and could not support the weight of the brooding mothers. The population waned alarmingly, and soon almost no young were being hatched. Eleventh-hour legislation banning the use of DDT was passed in 1970, saving the birds from certain extinction.

Human disturbance of the rookeries was another factor that contributed to the decline of the pelicans. Their rookeries are now closed to the public.

Although the pelican is still endangered, the outlook for its survival is good. More young are hatching every year, and the birds seem to be attempting to recolonize some of their former rookeries. At present, West Anacapa is the only place in the western United States where they breed on a regular basis.



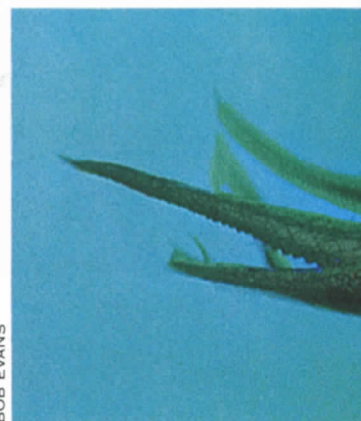
HENRY GENTHE



LOUIS PREZELIN

Ever eaten a kelp leaf? You undoubtedly have; kelp is widely used to make ice cream smoother and to homogenize chocolate milk. It is also used in the preparation of paints, drugs, cosmetics, and many other products. Gas-filled bulbs buoy the kelp "stipes" upward, and the "blades" lie in tangled masses on the surface of the sea.

The octopus is a jet traveler: It swims by sucking in water, then forcefully expelling it through a narrow siphon.



BOB EVANS

THE KELP BEDS

Great concentrations of life in the sea world are often found in beds of kelp, a giant alga that grows at a rate rivaling Jack's fabled beanstalk. The fastest growing plant in existence, it grows especially fast where nourished by cold, nutrient-rich water upwelling from deeper regions offshore. A growth of several feet a day is not uncommon, especially when there is plenty of sunshine, a basic element in the food chain that—together with water and organic wastes—sustains and nourishes many algae.

On the surface, a kelp bed resembles an impenetrable mass of sinuous, leafy, amber-colored vines. The bed is only a canopy, however, and consists of the blades of many stipes (stems), each striving constantly toward the sun. Underwater, the plants usually grow some distance apart, like trees in some undersea forest. The stems are buoyed upward by teardrop-shaped, gas-filled bulbs at the base of the blades. "Holdfasts," at-

tached to rocks on the sea bottom anchor the rootless plants, which often grow well over a hundred feet long, indicative of the depths at which they can live.

Kelp beds support and shelter a dazzling array of sea organisms, interdependent members of thriving communities that form a complex tapestry of life: Tiny colonial animals called *bryozoans* cover many kelp leaves; small snails and bugs walk the fronds; and bright-red turban shells sometimes cling to the stalks. Several fish live hidden in this jungle, including the giant kelpfish, the kelp bass, and the kelp rockfish. The wary bass is often difficult to approach, but the rockfish is quite the opposite, hence its popular name "dumb bass." Also present are grazing sea animals—including abalones, sea urchins, and a few fish—that prey upon kelp and other algae.

The grazing shellfish make desirable food for larger fish and consequently come under frequent attack. Predators patiently work away on

THOMAS COWELL

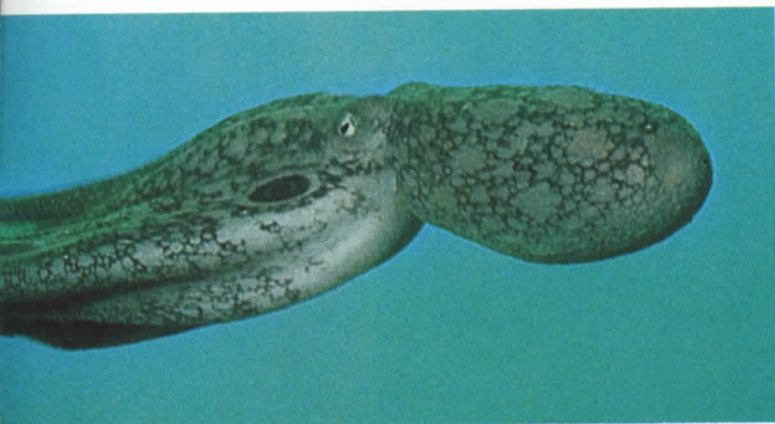


California spiny lobster, favorite of sport divers

BOB EVANS



Copper rockfish, an undaunted gaze



any chink in the armor of their heavy shells, until finally the weakness proves fatal. The sea star slowly entwines itself around its victim, attaching itself by means of the tiny suction cups on its tube feet. When applied to a shell, these cups exert such a steady pressure that its victim has little chance of escaping, especially if it is small and weak. Once the sea star has succeeded in opening a shell, it literally extrudes its stomach into it, enveloping and slowly digesting the hapless occupant.

The octopus has a similarly strange but efficient method of obtaining a meal. Like the sea star, it seizes its prey with powerful, suction-cupped arms. If the shell does not open readily, the octopus rasps a small hole into the surface with its beak, then injects a paralyzing venom into the shell's interior, rendering its inhabitant completely helpless.

Other predators obtain their food in less complicated ways. Bat rays, more prevalent in

R. A. CLEVELAND



Garibaldi, defending its lair

Island kelpfish, colorfully inconspicuous

THOMAS COWELL





BOB EVANS

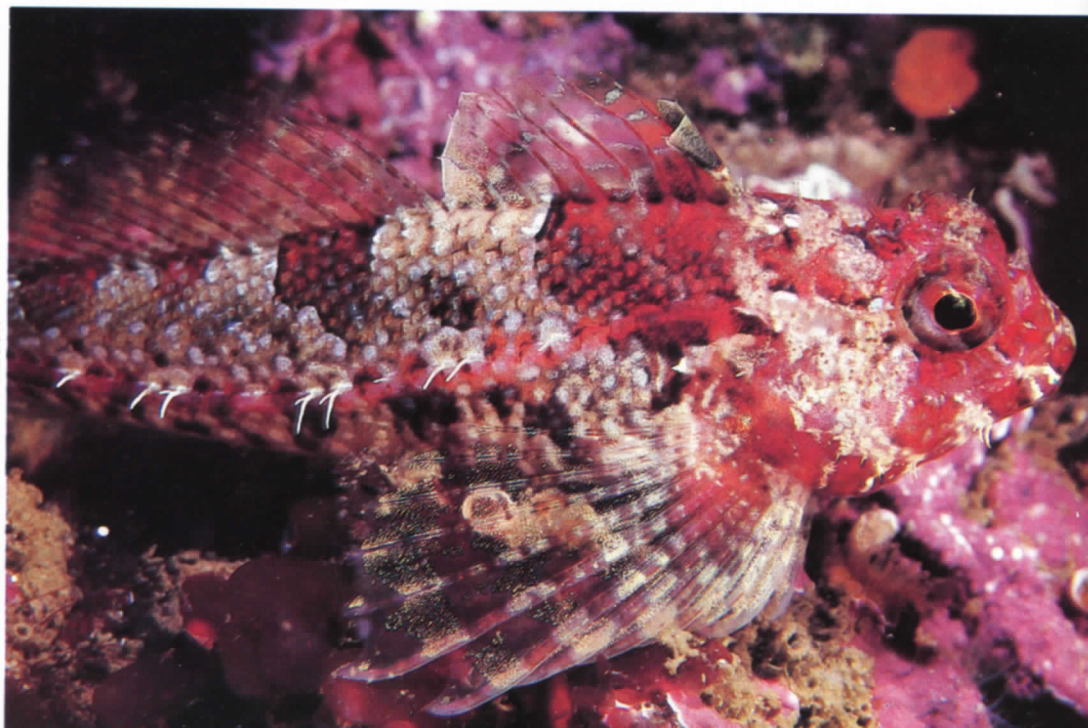
Many areas of the islands are riddled with caves, which make favorite hiding places for bottom-dwelling creatures. The darker the caves, the less life they contain, since even in this underwater realm sunlight is essential to sustain life.



R. A. CLEVENGER

The sculpin is a master of camouflage. But watch out! Many of the spines on its fins have poison sacs at their bases, and a wound can be very painful. Fortunately the sculpin is not an aggressive fish.

CURTIS DEGLER/MARK E. GIBSON





R. A. CLEVELAND

Despite their plantlike appearance, the strawberry anemone (above) and the tube-dwelling anemone (left) are really animals. Both possess stinging cells in their tentacles, with which they stun their prey. The waving arms surrounding the tube-dwelling anemone belong to many brittlestars—a type of sea star (starfish).

sandy regions, have been observed in kelp beds gobbling small purple sea urchins like candy. Cabezones—grotesque fish with swollen, bulbous heads, tufted eyebrows, and huge staring eyes—sometimes butt abalones right off the rocks as the abalones rear up to trap the leaves of algae. These fish can swallow amazingly large specimens, shells and all. Moray eels, fairly common in the waters of Anacapa and Santa Barbara, are notorious shellfish thieves, darting out from rocky lairs to steal the catches of other predators.

But the most brazen of the sea bandits is the California sheephead. Its huge buck teeth are ideally suited for crushing sea-urchin shells and prying abalones loose from their moorings. In spite of its unflattering name—earned by virtue of the fatty lump crowning its head, the sheephead is actually quite attractive. Its scientific name, in fact, means “beautiful fathead!”

This fish is even more fascinating when a bizarre fact comes to light: All sheepheads begin



THOMAS COWELL

The colorful gorgonian, related to coral

life as females, go through the spawning cycles and bear eggs, then at about seven years of age evolve into males. Sheepheads may live for fifty years, at which time they may weigh more than thirty pounds and measure three feet in length.

In the kelp beds live many hungry creatures who vie for the opportunity of picking up the crumbs after the feast. The cigar-sized seniorita has a healthy appetite, as do the rock crab and spiny lobster, all predators as well as scavengers.

In this same habitat lives the garibaldi, a bright-orange fish about a foot long. It has a habit of nervously rushing to and fro in front of its hole, all the while emitting a *glug! glug!* that is very audible underwater.

THE WANDERERS

Beyond the kelp beds roam a never-ending parade of ocean travelers. Some drift back and forth at the whim of the waves; others follow the ocean currents as if they were great highways



BOB EVANS

carved into the sea. Every October or so, the mighty gray whales begin a migration that takes them along a great corridor from their feeding grounds in the freezing Bering Sea to the balmy lagoons of Baja California, a 6,000-mile trip. There they bear their calves and breed again. Starting in February, with young in tow, they return to their northern haunts, retracing their route in the seemingly trackless sea.

This remarkable journey takes several months to complete each way. The whales pass through the Santa Barbara Channel from the end of December through March. They eat little as they travel, but they sometimes stop in the kelp beds to comb buglike creatures from the leaves with their enormous baleen plates. Suspended from their upper jaws, these plates are edged with brushlike filters that strain tiny organisms from the sea. It is strangely paradoxical that the whales—the largest creatures on the earth—eat some of the smallest. No doubt this is in their best interests; such food is readily available and exists in great quantities.

Sometimes it is possible to get a close look at these leviathans as they swim regally by the coast, their exposed, barnacled backs revealing the scars of many unknown and unimaginable adventures in the great sea. When the whale expels a breath, the condensed air and spray send a telltale spout skyward. Then the whale "sounds,"

The gray whale feeds by taking in great quantities of water and then forcing it out through the filtering baleen plates in its jaws. In the process, the small organisms that constitute the diet of this mammal are left in the giant's mouth. A multitude of barnacles grow in the skin of the gray whale's back, giving the animal its mottled appearance.



PETER HOWORTH

presenting its broad tail above the surface for only a moment before it disappears. The awesome power of its huge tail flukes is evident only in the great billows that roil the surface of the ocean.

The only enemies of the gray whale are the killer whale—and man. The whalers of the 1800s and early 1900s hunted this whale almost to extinction. The species has recovered to some extent (it now numbers about 17,000 animals) but its existence may still be in jeopardy.

Pacific white-sided dolphins often cavort in the company of passing boats, providing the passengers with unforgettable thrills. These high-spirited mammals wander far and wide in search of fish and squid.



PAUL REMEIK

Porpoises and dolphins, whose gentle countenances always seem to be smiling, also travel throughout this region. The chunky Dall porpoise, which looks somewhat like a miniature of the killer whale because of its bold black-and-white markings, rockets along just beneath the surface, occasionally bursting through the swells for a quick breath. The graceful Pacific white-sided dolphin also passes through from time to time, sometimes approaching so close that one can observe its short beak and sickle-shaped dorsal. Common dolphins often travel in large groups, frequently leaping completely clear of the water in exuberant displays of high spirits.

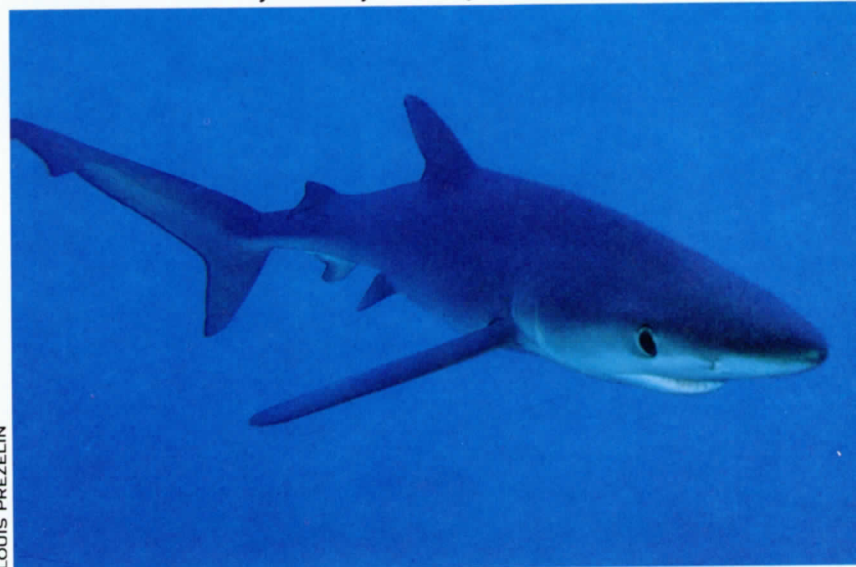
All of these animals seem to enjoy cruising along with the sightseeing boats—either in front of a boat or following in its wake. Their piercing, high-pitched squeaks and friendly faces never fail to delight the passengers, who eagerly vie for a place at the rail to get a better look.

Sharks, in some ways just as interesting as the porpoise, albeit not as popular, are often seen in the area. The fact that these fish are cartilaginous (they have no bones) is often looked upon as proof of their antediluvian nature, and in truth they have remained essentially unchanged for some 300 million years. However, there has been little need for evolution among shark species, and furthermore, in many ways they are even quite advanced. The absence of heavy bones serves

them well. Lacking this weight, they do not need the compensating gas bladders that ordinary fish depend upon for buoyancy and thus can descend and ascend with ease. (Bony fish will explode if brought up suddenly from deep water, because the pressure of water on the gas bladder drops too rapidly.)

Sharks are efficient predators, ranging far and wide like hounds on a scent. Some can detect a concentration of blood as tiny as a few parts per million in sea water, then swim to the source in

The blue shark is a study in deadly efficiency.



LOUIS PREZELIN

minutes even though a mile or more away. Like most predators, the shark usually singles out the weakest creature in a group. Its murderous reputation is largely undeserved: It rarely attacks man, and certainly it does far more good than harm as a key predator in a major food chain.

The shark most often seen near the Channel Islands is the "blue." A slender, graceful shark, with long pectoral fins and a great scythe of a tail, the blue derives its name from the rich hue of its upper body, which blends with the sea. Its belly is white, a color difficult for its enemies to see from below. (A two-tone color pattern is common to many fish.)

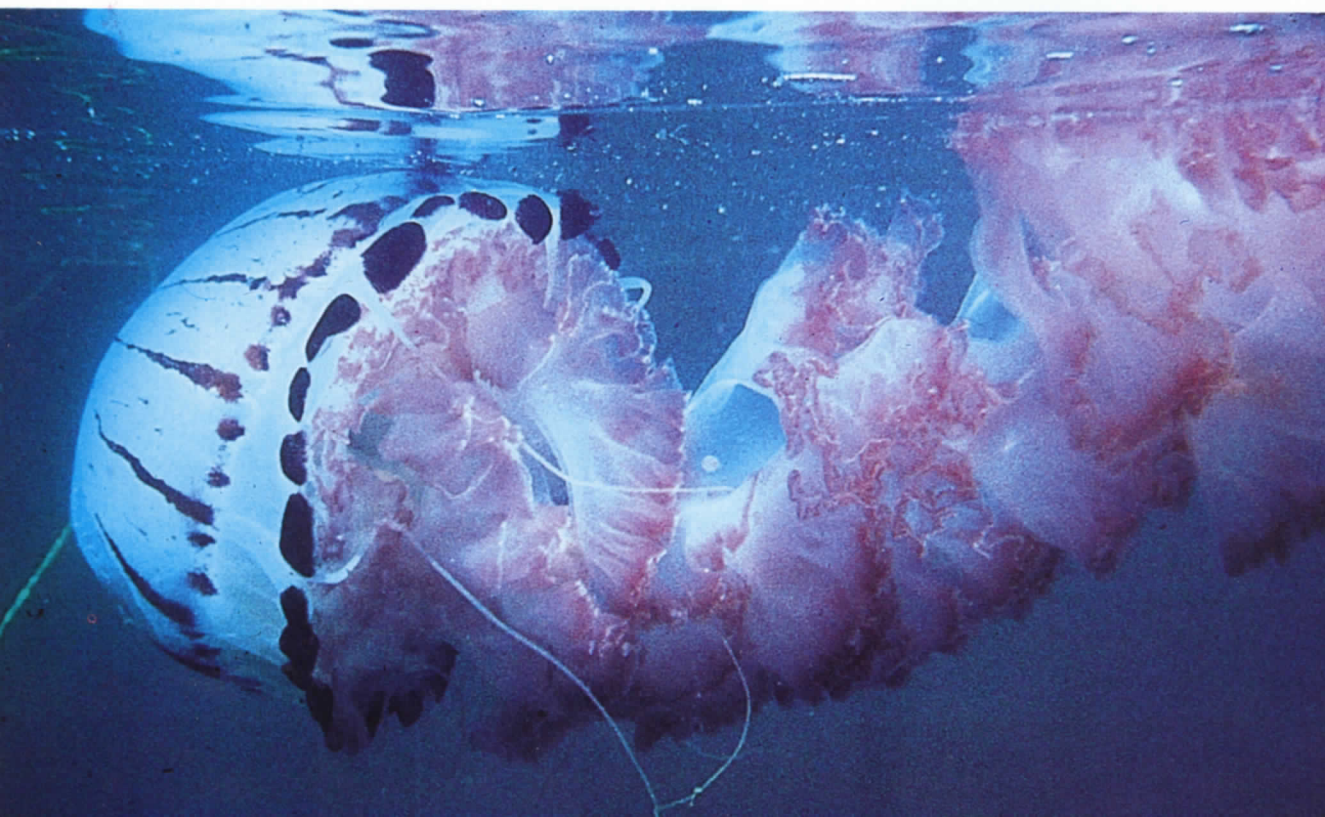
Whereas many sharks are sleek, efficient, and almost elegant in a deadly way, the sunfish, a distant relative, seems almost comic. Round like a platter, it sports a fin top and bottom, as if added as an afterthought. It has a parrotlike beak, not much more than a wrinkle for a tail, and a hole on each side of its head for gill openings. It does have lovely, blue-gray eyes, but they always seem to be staring in surprise. So slow and awkward that few creatures bother it, the sunfish is still an amazing thing, if only for its unusual ability to prey upon the jellyfish, whose stinging cells have no effect on the tough, sandpapery, resilient hide of the sunfish.

THE DRIFTERS

Often unseen and unappreciated are the drifting organisms. In the half-lit world beneath the sea, these intricate, translucent forms of fragile beauty hover weightlessly as they sift their



BOB EVANS



The huge, purple-striped medusa, a jellyfish, can attain a diameter of two feet and a length of more than ten. Its tentacles contain powerful stinging cells.

PETER HOWORTH

Divers examine two sun stars, large and able predators in the shellfish beds. The purple sea urchins are protected from such aggressors by their sharp spines.

The vivid Spanish shawl is a "nudibranch," a type of sea slug characterized by exposed gills along its back.



R. A. CLEVENGER

food from the water, perhaps like the jellyfish only to be devoured in one fateful instant by an awkward sunfish.

The most frequently seen of the jellyfishes is the huge, purple-striped medusa, which may grow to a diameter of more than two feet. Add to this the length of its tentacles, which in a healthy specimen may trail out eight feet or more, and it is an enormous presence indeed. The tentacles are equipped with stinging cells that stun small prey. Tiny crabs often live within the jellyfish and feast upon the scraps of their host's meal.

Another type of jellyfish is the small, by-the-wind sailor that appears sometimes in the spring, seemingly at the whim of wind and current. It differs from other jellyfish in that it has a tiny, gas-filled "float" that keeps it upright on the surface and a triangular "sail" that catches the breeze. Sometimes these errant sailors dot the sea in windrows as far as the eye can see.

Then there are the walnut-shaped comb jellies, propelled by eight rows of tiny "paddles" that catch and reflect almost every color of the spectrum as the creatures silently swim along.

The most important of all sea life is that which usually is not visible to the naked eye. This is the plankton (the word means "wandering"), multitudinous organisms that hang suspended in the water. Made up of microscopic plants and animals, including the larval forms of many larger organisms, it drifts with the currents, collectively forming the most essential element in the food chain. Without plankton and the wastes gener-



MICHAEL ENDLER

The navanax, a predatory, shell-less snail, glides along the sea bottom on a slimy foot. It feeds on its kin.

ated by it, life in the sea would probably cease to exist. It is the basic food for creatures as diverse as clams and whales. Sea water, which often seems so clear and pure, is actually a bouillabaisse teeming with these unseen organisms.

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Man in the Channel Islands

The Channel Islands, with their abundant natural resources and relatively warm climate, have long attracted man. Civilizations have existed here for thousands of years, although a few relics—aging bones, crude stone tools, and a scattering of other artifacts—are all that remain of these ancient peoples. But in the last millennium the record is clearer, revealing a procession of widely disparate cultures. First came the seafaring Indians; then the explorers, fur traders, adventurers, and settlers; and finally the scientists and sightseers of today. They follow one after the other in an exciting and colorful pageant that contains the best and the worst in man's history.

THE SEAFARERS

No one knows when man first arrived in the islands, but the earliest concrete evidences of human habitation have been scientifically dated at eleven thousand years. These were the human

bones discovered on northwestern Santa Rosa. Of this earliest islander we know only that he did exist. Of subsequent cultures, however, we have the kitchen middens—refuse heaps whose contents reveal that the diets of these Indians consisted mostly of intertidal shellfish and other marine organisms, supplemented by seasonal berries, nuts, roots, bulbs, and plants. (Large land animals, such as the dwarf mammoth, had already disappeared.)

As in most civilizations, new ideas and tools heralded every advancement. Beyond the breakers lay a treasury of unlimited wealth just waiting to be tapped: Fish and marine mammals were there if they could catch them; other lands and peoples were there to trade with if they could reach them. It was inevitable that the islanders would take to the sea.

The first watercraft built in the channel region were crude boats made from bundles of tule stalks lashed together. Later, dugouts were hewn from great logs. Neither type of vessel was suited for long voyages: The tule boat was slow and cumbersome; the dugout was not very seaworthy.

Legend has it that it was a Santa Cruz Indian who built the first really useful boat—by lashing rough planks of driftwood together to form a hull and sealing the seams with a mixture of pine pitch and asphaltum. The technique spread, and soon this canoe—the *tomol*—became a familiar sight throughout the islands and along the coast.

The *tomol* proved fast and seaworthy; it could fairly fly through the water. (Some archeologists claim that the *tomol* was one of the most



RUSS FINLEY

A reminder of the days of the Old World explorers, this monument to Portuguese navigator Cabrillo stands on a bleak knoll on lonely San Miguel. The location of the actual grave has remained a mystery to this day.

advanced technological achievements of all the early North American cultures.)

The watery barrier was finally overcome, and a new world opened up. Trade expanded from island to island, and from the islands to the mainland. Prosperity came to the islanders, who soon became known as *Mitc-tcumas* (mitch chew-mash) and later simply as the *Chumash* ("islanders"). They were specialists in making goods such as shell beads, which they used as money among themselves and for barter with mainland Indians.

The Chumash lived well. Making good use of their special skills, they reaped the bountiful harvests of the sea. These products, together with island resources and the food and commodities obtained from coastal Indians, supported many villages, some having hundreds of inhabitants.

Each village had its chief, or *wot*, and its cult of thirteen shamans, or *antap*, whose task it was to keep the forces of the universe in harmonious balance. The villages consisted of orderly rows of circular, thatched huts about thirty feet or more in diameter. Other structures included the chief's house, sweat lodges, storage facilities for food, and a temporary hut where the infants were born. Nearby were places for games, a cemetery, and an area for rituals. The summits of the hills often served as shrines.

By the time the first Spanish ship was seen on the horizon, the Chumash had developed into a complex, thriving society.

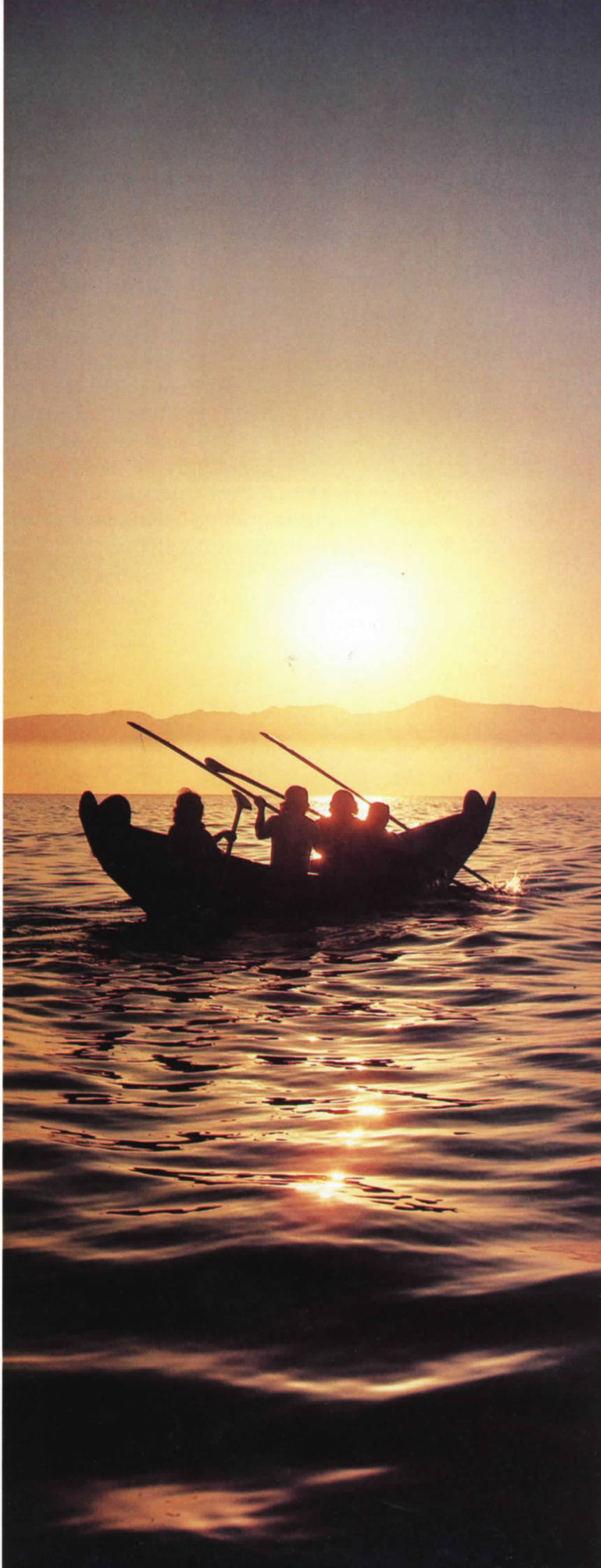
THE EXPLORERS

Much of the information we have about the Chumash was provided by the journals of the early explorers and missionaries, biased though these accounts usually were.

The first of the Europeans to arrive was Juan Rodriguez Cabrillo, a Portuguese navigator in service to the Spanish crown. In September of 1542, Cabrillo left the familiar waters of Mexico, in which the Spanish were well established, and ventured northward on his voyage of discovery. Like many other navigators of his era, Cabrillo dreamed of finding the so-called northwest passage and thus shortening the trade route between Europe and Asia. He failed, of course, in this

This replica of a Chumash tomol, paddled by modern-day descendants of the Indian seafaring people, evokes a haunting island scene from centuries past.

PETER HOWORTH



The plucky sea otter, almost eradicated by fur traders of the 1800s, has the last "word." Its comeback has been nothing short of miraculous.

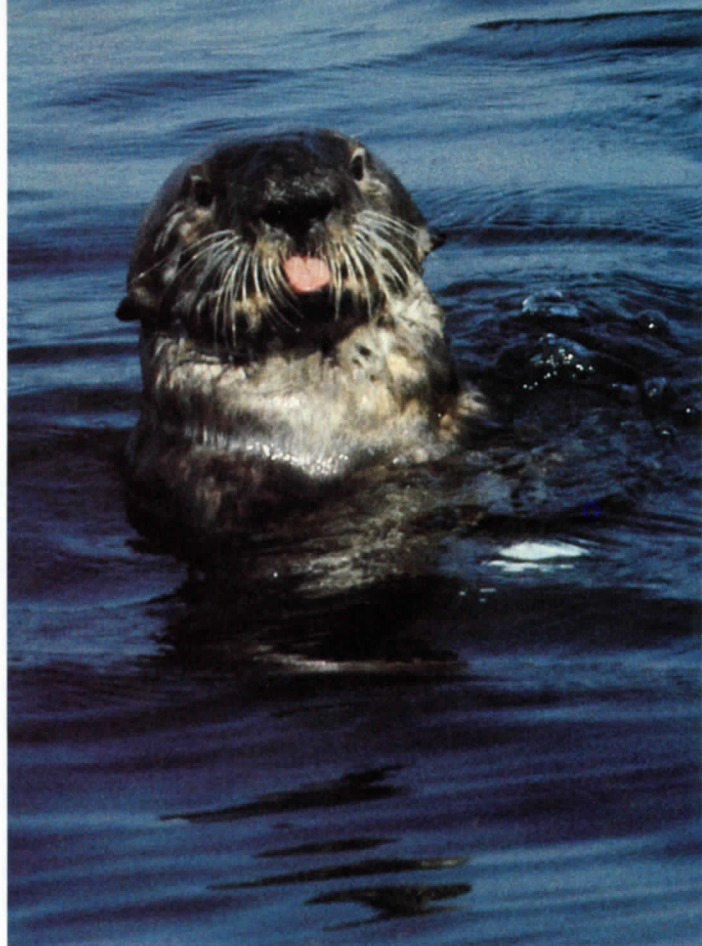
quest. Instead, Cabrillo discovered parts of the coast of California and claimed them for Spain.

He evidently missed Santa Barbara and San Nicolas islands on his way up, although his pilot did spot the latter on the return trip. Cabrillo's first landing was at Santa Catalina; he then sailed past the first three northern Channel Islands and anchored at San Miguel. From there he pressed northward, reaching a point just beyond San Francisco Bay (which apparently he never saw) before turning back to the sanctuary of the Channel Islands, his ungainly ships having proved no match for the turbulent northwesterlies.

By November, the two-caravel fleet was again at San Miguel, which Cabrillo had named *Isla de Posesion* ("Island of Possession"). Here Cabrillo died, apparently from a gangrene infection of a broken limb suffered earlier. Some historians believe that he was buried on San Miguel. None of the place names that Cabrillo had coined for the islands he discovered was to endure.

In 1602, the Spaniard Sebastian Vizcaino followed in Cabrillo's wake. It was he who named the southernmost Channel Islands—San Clemente, Santa Catalina, San Nicolas—and Santa Barbara, which he himself discovered and named for the patron saint of navigators. These names survived, although those he chose for the northern islands did not. Vizcaino, also in search of the elusive passageway, sailed as far north as Point Reyes. Several historians believe that San Francisco Bay was discovered on this voyage, although its real history did not begin until Gaspar de Portola entered the bay 167 years later.

It was Portola's expedition that named Santa Cruz. But it was Captain George Vancouver, sweeping down the coast in 1793, who resolved the controversy over what to call the other three. Sailing under British colors, Vancouver hoped to establish claims for England and to report on the Spanish settlements. After studying the old charts of the region, he settled on the names "Santa Rosa," "San Miguel," and "Anacapa." (Anacapa was the only island to keep its Indian name, *anyapah*, meaning "ever-changing." It was an appropriate choice; even today Anacapa seems to change before one's eyes as distance, atmosphere, and temperature constantly modify its appearance.)



PETER HOWORTH

THE FUR TRADERS AND SEALERS

The Spanish explorers were motivated to discover new lands and trade routes to satisfy the crown's lust for gold and to obtain converts for the cross. The fur traders, on the other hand, were spurred by dreams of personal gain, often bordering on obsession. The Russians and Yankees vied aggressively in a relentless campaign to hunt down the sea otters of the Pacific Northwest, whose coats were highly prized in Europe and Asia.

Soon, the government of New Spain, as Mexico was then called, joined in the exploitative contest. The plan was clever: to encourage the Indians to hunt the sea otters along the California coast and among the islands, and to bring the pelts back to the missions. Once in the hands of the Spaniards, the furs could be exchanged for quicksilver in the China trade. Quicksilver, used in the process of extracting gold from crushed ore, was vital to the development of the Spanish mining interests in Mexico. Moreover, by harvesting the otters themselves, the Spaniards hoped to keep the foreigners out of their lands.

But the Spanish officials failed to reckon with the persistence, cunning, and avarice of the Yankees, of the Russians, and of their own people.

First to arrive in the ports of California were the Americans. Claiming to be desperately in

need of food, water, supplies, and refuge, they were welcomed wholeheartedly by the impoverished residents. At the mercy of authorities who would pay only a few pesos for prime pelts, the Californians were all too glad to trade with the Yankees, who in return gave them choice goods hard to come by in the New World. The Spanish officials soon caught on, but when they did the wily skippers merely moved their operations to more remote parts of the coast.

Meanwhile the lamentable slaughter of the sea otters gathered momentum. Local Indians harpooned them from their canoes or shot them with bows and arrows. With lines bristling with hooks they snared the pups and then gave the squawling youngsters enough line to swim toward their mothers, who were caught and killed as they came to the rescue.

But the Chumash were not as efficient as they might have been. Resentment toward their new rulers was high: Their lands, their beliefs, their very way of life had been shattered by the Spanish newcomers, who gave them little in return. These people, who had lived on their own islands for hundreds of years, now fared scarcely better than slaves.

The Yankees, wanting more furs than the Chumash could deliver, went to the Russians, and together they made a deal in which shrewdness and greed reached a new high. The Americans agreed to provide the ships if the Russians would recruit Aleut Indians as hunters. The proceeds would be split. In this scheme the Russians could stay out of the picture for the most part, since they would reap considerable profit with little risk to themselves. Of course they were always ready to take advantage of any opportunity to increase their take.

The resulting chaos was not unlike a war. In contrast to the Chumash, the Aleuts, accustomed to life in the savage north, were ruthlessly efficient. In their swift *baidarkas*—kayaks made from seal skins stretched over whalebones—they could go nearly anywhere in search of the otters, quickly escaping if detection by the Spaniards seemed imminent.

During this period, some Yankees, several Aleuts, and a few Russians were captured, although most were released after a couple of years in Spanish prisons. As tempers grew hotter, the Spaniards sometimes even shot at the Aleuts in their *baidarkas*. Of course it was the otters who were the real victims in this war of greed. Their numbers dwindled alarmingly as hunting intensified.

A wide variety of plants is found on all the Channel Islands, perhaps because of the diversity of habitats and climatic conditions. Some island plants grow nowhere else in the world.



F. G. HOCHBERG

Blue-eyed grass flowers

A western thistle variety, found on Santa Rosa and San Miguel



F. G. HOCHBERG

Coastal prickly-pear cactus



RUSS FINLEY

The Chumash also suffered. Aleuts raided their villages, shooting and raising general havoc among them. To protect them and at the same time gain more converts for the church, the mission fathers began to transport the Chumash to the mainland. By the mid-1800s, all the Chumash would be gone from the islands and living in coastal missions.

In 1821 Mexico won independence from Spain. Trade was soon opened, and foreigners were allowed to hunt in the Channel Islands provided they paid duties to Mexico. The new government had no vessels for patrolling the islands, however; so the fur traders, whose vessels were large and heavily armed, simply took what they wanted. These marauders frequently used Santa Barbara Island as a camp.

In 1836, a running sea battle took place off Santa Rosa. Several Yankees were ambushed by some Aleuts, who came under cover of fog. The Yankees, reinforced by a crew of Hawaiians, stood their ground, and for perhaps the first time the fierce Aleuts were turned back in defeat.

Gradually, as the otters became scarcer and thus harder to find, the fever cooled, but it was far too late to turn the tide for the otters; thousands had perished in only a few decades.

The hunters now turned their attention to the seals, and soon the Guadalupe and northern fur seals were being slaughtered at an alarming rate. The sealers usually surprised the animals right on the beaches where they lay after hauling out, crowding them into tight masses and then mercilessly clubbing them to death. And whenever possible they drove them to slaughtering grounds from which it was more convenient to transport the pelts back to the ships.

The elephant seal was the next to suffer the effects of the frenzied scramble for trade items. Its blubber, once rendered out, yielded a superior grade of lubricating oil, and a large bull might produce more than two hundred gallons. The sea lion, although good for only a few gallons, was taken as well. The whiskers of both creatures were sold in China for use as opium-pipe cleaners.

By the late 1800s, the sea otter was virtually extinct in the Channel Islands, along with the Guadalupe fur seal, the northern fur seal, and the northern elephant seal. (The wary harbor seal, too clever for even these relentless hunters, escaped the brunt of the massacre.) Legislation finally curtailed the taking of seals in this region, but the measure had come none too soon.

Eventually hopes for the survival of these animals rose when new sightings of many species



Sea lions constantly fight for dominance. The loudest talker usually wins.

Sea-lion pups depend upon their mothers for food during their first two or three months of life, and later they must be taught to fish and swim. After six months or so, they join others of the same age group and gradually venture farther out to sea. Adults can sometimes go for months without eating.

thought to be extinct were made. In the late 1800s, about fifty elephant seals were reported to be living on a small island off Mexico. In 1938 a remnant colony of about 125 sea otters was discovered off Big Sur, on the central California coast. In 1954 a breeding colony of a few Guadalupe fur seals was found in a cave on a Mexican island. And by 1964 northern fur seals had established a small breeding colony on San Miguel.

So in spite of the near annihilation of several species by the fur traders and sealers, most of the animals are staging a comeback. Today, tens of thousands of California sea lions are found in the Channel Islands, particularly at San Miguel. Northern elephant seals number in the thousands, a truly remarkable recovery. Northern fur seals are firmly established at San Miguel and number several hundred. Even some Steller sea lions, far more common to the North, breed there. Guadalupe fur seals now appear fairly regularly at San Miguel, and there is hope for a new breeding colony. Many hundreds of sea otters frequent the Big Sur coast, and their "advance scouts" have been spotted in the Channel Islands.



HARA

Sea lions, like dogs, get fleas and mites, and they too enjoy a good scratch.

THE SETTLERS

The sealers occasionally made temporary camps on the islands, and other people—mostly vagabonds—drifted in and out, as if blown by the winds. The first to stay for any length of time were probably convicts and pirates, whose punishment was banishment to the islands. Here they lived in isolation in what must have seemed a desperately inhospitable environment. The Spaniards supposedly used Santa Barbara Island in the 1700s for this purpose. (This is possible; English pirates are known to have raided Spanish galleons along the North American coast about this time.)

Prisoner's Harbor, on Santa Cruz, reputedly was used as a convict colony for a few months in the spring of 1830, when prisoners from Mexico were transported to the island along with supplies, livestock, and grains for starting their own food crops. Apparently a fire destroyed the colony that fall, after which some of the convicts built rafts, crossed to the mainland, and merged with the population, so the story goes.

Mid-century, when California began to boom, some of the Chinese immigrants who

The young of all species are appealing; sea-lion pups are especially so.



HARA



The red abalone is the largest of about a hundred species found worldwide. Its delicate white meat has been a coveted gastronomic delight for decades.

DANIEL GOTSHALL

came to labor in the gold fields discovered their own bonanza in the tidepools of the islands and the mainland. Abalones—huge, flattened marine snails with heavy, bowl-like shells and delicious, subtly flavored meat—were everywhere, sometimes stacked two and three deep. Their natural enemies, sea otters and Indians, had all but disappeared in the islands, and as a result, intertidal shellfish populations had boomed.

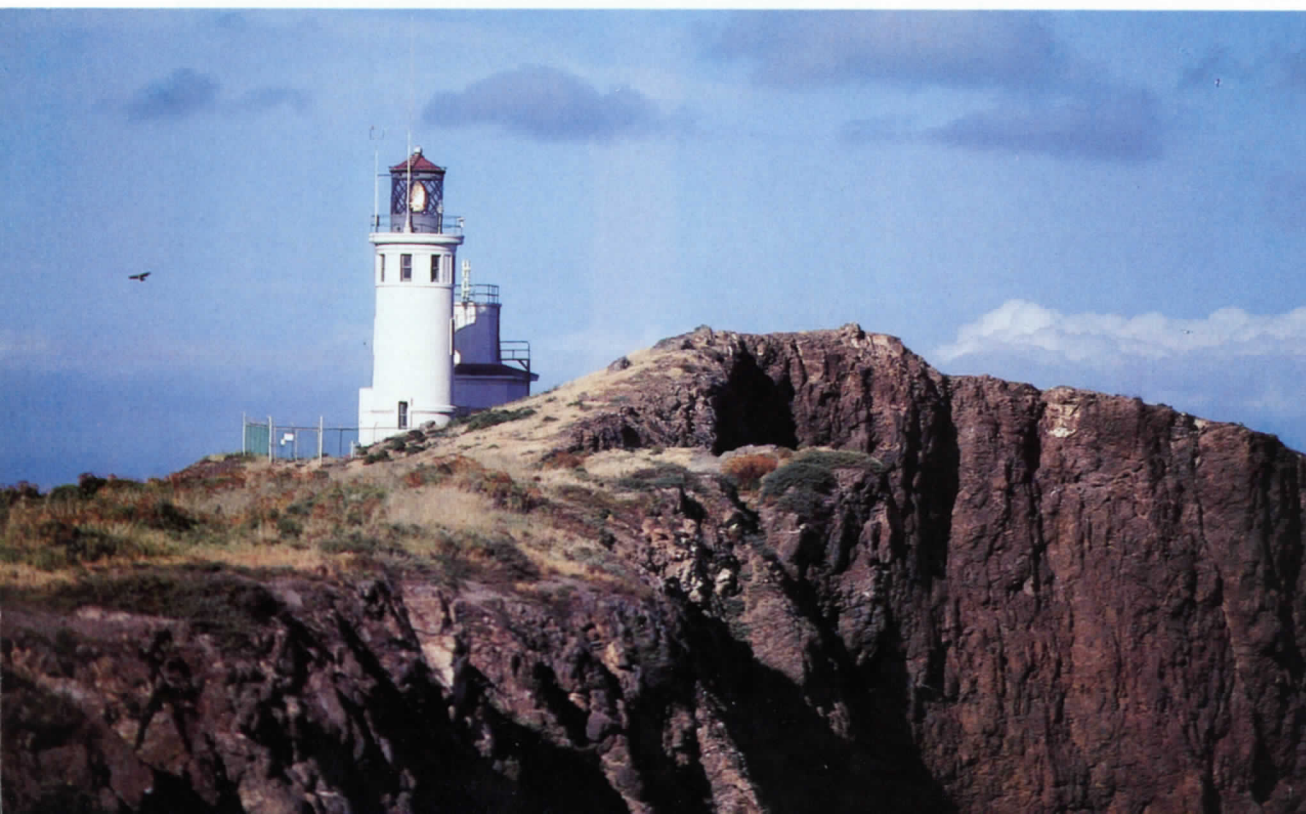
Working out of makeshift fishing camps, the Orientals worked steadily, moving on to another abalone-rich cove when they had exhausted the supply in one. Abalones were dried and shipped to China by the ton; by 1879 more than four million pounds a year were being exported.

Another prized seafood item was the lobster, or crawfish (as it was then called), which was shipped to the mainland. The good fishing soon

began to attract people of other nationalities, and their camps sprang up in many island coves throughout the years, only to be abandoned when the fishing became slow.

Some of the fishermen of this period have become part of island lore. During the Depression, H. Bay Webster, a barefooted wanderer, lived on Santa Barbara Island with a tribe of scraggly cats, which had been either abandoned or shipwrecked. The point where his shanty once stood now bears his name. Long after Webster was gone, the cats lived on, mostly by raiding sea-bird nests, and it was not until 1978 that the last cat was taken off the island. Then there was Raymond LeDreau, a Frenchman who lived on West Anacapa at the spot now known as Frenchy's Cove. For years he eked out a living by selling his catches to passing boatsmen.

The real settlers, the ranchers, did not begin to arrive until the latter half of the nineteenth century. And of course they brought their sheep. In the early days, these animals often were allowed to roam and reproduce freely; as a result, large natural areas were ravaged. Native plants were cropped to the nub, and some plant species unique to these islands may have perished as a result.



Were it not for lighthouses, the Channel Islands would be littered with shipwrecks. Even with today's sophisticated navigational equipment, ships still occasionally go aground.

This freighter, the Chickasaw, was wrecked in 1962 on Santa Rosa, sailing inbound in a blinding rainstorm.

RUSS FINLEY

This forlorn chimney stood at San Miguel for many years before its collapse. The ranch house burned to the ground long ago. Herbert S. Lester, the "legendary king of San Miguel" and his wife lived on this remote island for twelve years and raised their children here.

On Santa Barbara Island, rabbits proved even more devastating than the sheep, oddly enough. Originally brought to the island to provide extra food for island residents, they multiplied at a tremendous rate, as rabbits will, and soon the voracious creatures were everywhere, gobbling up all the plants within reach and girdling giant coreopsis trunks when they couldn't get to the branches. (In 1954 a rabbit-control program was initiated to check the wholesale onslaught upon the native vegetation. It has helped considerably and as long as the rabbit population is kept under strict control, Santa Barbara plant life has a chance to recover.)

The ranchers of a century ago, as unaware as people everywhere were then of the effects of overusing the land, cleared parts of the islands by burning and cutting the vegetation; they then



PETER HOWORTH



sowed crops in the open, plowed fields. The seeds they brought inevitably contained weeds (mostly foxtails and mustard), although a few of these unwanted seeds may have arrived on the clothing, tools, supplies, livestock, and pets of the settlers. As for the crops, they were Mediterranean grain-types such as oats and barley, fast-growing exotics that often choked out the native vegetation entirely.

The settlers also introduced the eucalyptus trees, which still grow on parts of Anacapa, Santa Cruz, and Santa Rosa; and it was a rancher, Justinian Caire, who in the 1880s planted the olive trees that still stand in rows at Smuggler's Cove on the southeastern shore of Santa Cruz.

Caire, together with nine other San Francisco businessmen, purchased the island and formed the Santa Cruz Island Company in 1869. By 1880 Caire had acquired all stock in the company and had moved to the island. Over the years he built a prosperous and beautiful settlement, complete with church and winery. His ranching operation

included sheep and cattle, and pigs ran wild in many parts of the island.

About 1927 Santa Cruz was separated into two ranches—one at the eastern end and the other (by far the larger) encompassing the rest of the island. In 1937 the large ranch was sold to Edwin L. Stanton, who revived the Santa Cruz Island Company, the smaller ranch being retained by the descendants of Caire. Throughout the years since then, the island has remained much the same as it was.

In 1978 the Santa Cruz Island Company (the Stanton holdings), recognizing the importance of keeping the island intact for the future, entered into a conservation agreement with the Nature Conservancy, a private, non-profit organization dedicated to the preservation of unique natural habitats worldwide. Today these entities jointly administer the island, excluding the Caire ranch. The entire island is private property, and permission to land there must be obtained.

Nearby Santa Rosa was also once a sheep ranch. At the turn of the century, however, it was purchased by Vail & Vickers, a company that removed all the sheep and established a cattle ranch. This island, too, is still under private ownership, and permission to land there must be obtained. Santa Rosa has remained basically unchanged in this century, although scattered herds of deer and elk, introduced at one time for food and sport, still wander over the island, as do feral pigs. Fortunately, these animals do not reproduce as fast nor are they as destructive in their grazing habits as the uncontrolled sheep of former days.

Sheep-raising was also pursued on Anacapa, Santa Barbara, and San Miguel, by settlers who leased the federally owned lands. They built structures that ranged from shanties to elaborate ranchhouses, none of which remains.



LOUIS PREZELIN



JASON RUBINSTEIN

The islands provide underwater photographers with a wealth of subjects. The cool water is laden with nutrients and supports a rich variety of life. Luxuriant undersea gardens, formed by algae plants, abound with color. The water here is usually very clear, in contrast to the murky depths off the mainland coast.

visitors may hike on
 se islands that are
 derally owned, and
 trails have been de-
 signed for such use.
 ecologically sensi-
 ve areas, however,
 a naturalist guide
 usually accompanies
 each group.

JASON RUBINSTEIN



*You don't have to get your camera wet
 to get some memorable photographs.
 Spring flowers, seals, porpoises, whales,
 and even sea gulls are but a few of the
 subjects that make the Channel Islands
 a photographer's dream. The only
 danger is running out of film!*

F. G. HOCHBERG



R. A. CLEVENGER





The new visitor center for Channel Islands National Park, in Ventura, California, is an architectural interpretation of the park theme of earth, sky, and sea.

THE ISLANDS TODAY

Today there are no sheep on the islands except those on Santa Cruz Island. There, some sheep are raised in the private ranching enterprise at the eastern end, where grazing is controlled in keeping with modern range practices. Some feral sheep roam in other parts of the island, although their numbers are kept down. Throughout the islands, much of the land that once served as sheep pasture is recovering, albeit slowly.

The settlers were not the only inhabitants of the islands in the early part of the century; Anacapa and Santa Barbara also hosted personnel of the old U.S. Lighthouse Service (forerunner to the U.S. Coast Guard). Shipwrecks were occurring all too frequently in the Channel Islands, and in 1912 a lighthouse was constructed on Anacapa. A small light was subsequently placed on Santa Barbara. The lights are still in use, although the acetylene light on East Anacapa was replaced in 1932 by the present 600,000-candlepower lighthouse (fully automated in 1966).

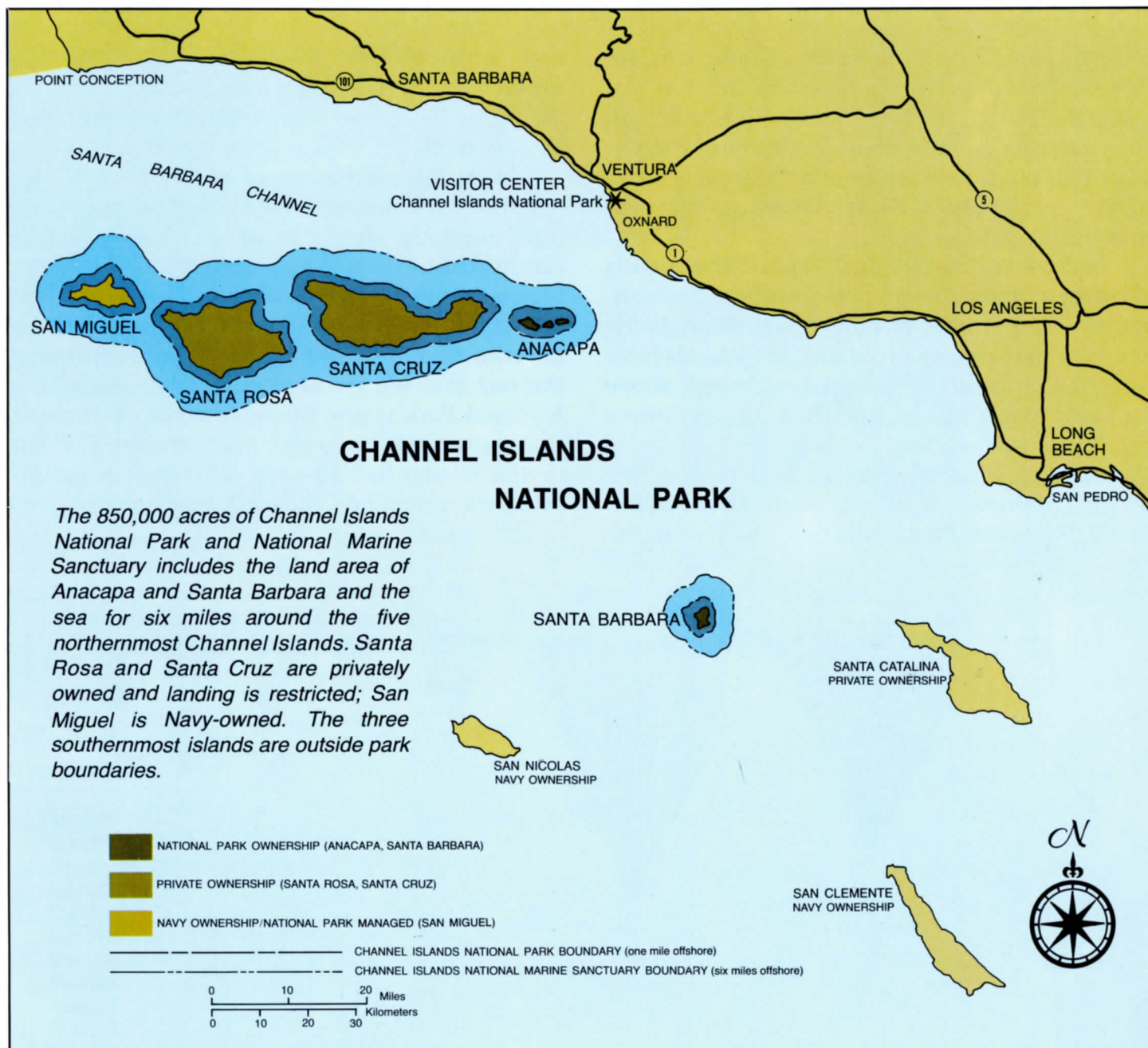
In 1938 President Roosevelt—responding to demands to preserve the paleontological remains and geologic formations on Santa Barbara and Anacapa—proclaimed these islands a national monument. Anacapa then came under the administration of the National Park Service, al-

though U.S. Coast Guard personnel remained on the island, living in the old lighthouse buildings. (Some of these houses, as well as the lighthouse itself, are still there, but they are used by Park Service personnel only). During World War II, the islands of Anacapa and Santa Barbara were pressed into service by military observers for the early detection of enemy planes.

The very real threat of invasion was then a far more urgent priority than the preservation of island plant and animal species. Thus it cannot be said that military activities were geared toward conservation, although they may have served the overall cause by preventing commercial development from taking place here. At any rate, some damage to the ecology of the three government-owned islands did occur in this period.

But it was farflung San Miguel that suffered the most. During the war and for several years thereafter it was used as a Navy bombing range. Fortunately for the precious island communities and the irreplaceable archeological sites there, this type of training eventually became largely obsolete, and the Navy shifted most of its operations farther offshore. In 1976 San Miguel came under the management of the National Park Service, although the Navy still owns the island.

On March 5, 1980, President Carter signed into law a bill abolishing Channel Islands Na-



tional Monument and raising the status of the old monument islands—with the addition of the waters surrounding Santa Cruz and Santa Rosa—to that of a national park, thereby taking the ultimate step in preserving the islands for the future. Later that year, the 250,000 acres encompassed by the new Channel Islands National Park (including one mile offshore each of the five islands) were augmented in their protective capacities by the 600,000 acres provided under the Marine Sanctuaries Act. This pushed the boundaries to six miles offshore, encircling Santa Barbara with a protective belt and solidly covering the four northern islands and their interconnecting waters with a protective lid.

The Channel Islands is also one of the reserves that is included in the Man and the Bio-

sphere Program (MAB), an international effort to define and cope with worldwide environmental problems and issues.

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The Legacy of the Channel Islands

In the Channel Islands, so near yet so remote, life forms have evolved in relative isolation. Here, for millennia, they have been left alone to adapt to their differing environments in differing ways—ways that often seem curious or strange or even bizarre to us but have always served specific purposes in the natural world.

The watery barrier that molded the islands has served to sustain and preserve them throughout this vast stretch of time. Even through the centuries of man's involvement, the islands have remained relatively untouched, although abuse and exploitation have constituted many sorry chapters in their history.

But as civilization presses ever nearer, this isolation becomes more and more a two-edged sword. It has provided protection, but at the same

time it has rendered the island and sea life profoundly fragile: Unexposed to outside influences, life forms have thus become much more vulnerable to them.

With the establishment of Channel Islands National Park and National Marine Sanctuary, we have made the commitment to stabilize the precarious existence of the islands and their offshore waters and to preserve and nurture their precious attendant life. Our children will benefit, but it is we who have the most to gain, if only because of the fact that we are here now. Channel Islands National Park is one of the few places on earth that we can rely on to stay much the same. Here, in the thoughtful attitude that such a natural museum commands, we can pause, enjoy, reflect . . . and go on.—G.R.D.



LOUIS PREZELIN

The innocent eyes of the sea lion symbolize the good in nature that must be preserved.

*This sea lion, silhouetted by the golden light of a Channel Islands' dawn, is a study in dignity and grace.
Photo by Ernest Brooks II*

Back cover: Even endangered species, such as this brown pelican and her young, can now look forward to a secure future in their elegant island world. Photo by Russ Finley

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